



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,581	03/29/2004	Hidekazu Shimomura	03500.018003.	3836
5514	7590	08/09/2005	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			KHATRI, PRANAV V	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	
			2872	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SA

Office Action Summary	Application No. 10/810,581	Applicant(s) SHIMOMURA, HIDEKAZU	
	Examiner Pranav V. Khatri	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/21/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5, 6, 10-12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US Patent No. 6,317,246) in view of Kawamura (US Patent No. 6,496,293) and in further view of Takanashi (US Patent No. 5,247,385).

Regarding claim 1, Hayashi et al. discloses a deflection means (see Hayashi et al. Fig 1 Numeral 16) for deflecting at least one of the light fluxes emitted from the light source means (11); and a scanning optical system for imaging (Col 4 Lines 11-16) the light flux deflected by the deflection means (16) onto a surface (18) to be scanned (Col 12 Lines 43-49), wherein the scanning optical system comprises at least two lenses (17) including a glass lens (Col 13 Lines 62-64) and a plastic lens (Col 9 Lines 27-30), and chromatic aberration of magnification in a main scanning direction in the optical scanning device is corrected (Col 4 Lines 11-17). Hayashi et al. lacks the teaching of a light source means for emitting at least one light flux having a wavelength equal to or smaller than 500 nm, and at least two lenses each of which has an opposite sign of power, further chromatic aberration of magnification in a main scanning direction in the optical scanning device is to be equal to or smaller than 40 μm in the case where a

difference of wavelengths in the light flux emitted from the light source means is set to 5 nm.

However, Kawamura teaches of a light source (see Kawamura Fig 1 Numeral 1) means for emitting at least one light flux having a wavelength equal to or smaller than 500 nm (see Col 2 Lines 51-58).

Furthermore, Takanashi teaches of at least two lenses each of which has an opposite sign of power (see Takanashi Col 2 Lines 35-37 and Lines 42-46).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Hayashi et al. scanning optical device and image forming apparatus with the wavelength of Kawamura's optical scanning device and Takanashi's lens formation for the purpose of employing a beam having a short wavelength that reduces the diameter of a beam spot; further, it is well known in the art that reduction of the diameter of the beam spot is proportional to the wavelength used (see Kawamura Col 2 Lines 19-20); and for the purpose of correcting chromatic aberration with respect to magnification with the opposite sign power of the lenses. In addition, Hayashi et al. teaches chromatic aberration of magnification being eliminated in the subscanning direction, and it would be obvious to one of ordinary skill in the art at the time the invention was made to choose values that are small enough or arbitrarily for the purpose of eliminating the chromatic aberration of magnification in the main scanning direction by manipulating numbers, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesh*, 614 F. 2d 272, 205 USPQ (CCPA 1980).

Regarding claim 2, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses wherein the scanning optical system comprises a glass lens (see Hayashi et al. Col 13 Lines 62-64), a first plastic lenses (Hayashi et al Col 9 Lines 27-30) and a second plastic lens (Hayashi et al Col 9 Lines 27-30), which are disposed in order from the deflection means, the glass lens having negative power in the main scanning direction (see Takanashi Col 16 Lines 26-28) the office interprets the first lens group of Takanashi can be made of glass and substituting glass lenses for plastic lenses is well known in the art, the first plastic lens having positive power in the main scanning direction and the second plastic lens (see Takanashi Col 16 Lines 28-30).

Regarding claim 3, Hayashi et al. in view of Kawamura and in further view of Takanashi is silent about the teach wherein the scanning device according to scanning optical system satisfies a relational expression, $|\Phi_G/V_G + \Phi_P/V_P| < 0.02 * \Phi$;

However, the relationship is well known in the art because there is obviously a power to lens relationship with the total power divided by the number of lens and the total power of all the systems.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a power relationship expression, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claims 5 and 14, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses wherein the light source means includes a multi-beam light

source (see Hayashi et al. Fig 1 Numeral 11 and 12) that emits at least two light fluxes (see Hayashi et al. Col 4 Lines 11-16).

Regarding claim 6, Hayashi et al. in view of Kawamura and in further view of Takanashi according to claim 1 discloses a photosensitive member (see Kawamura Col 5 Lines 60-62) located on the surface to be scanned (see Kawamura Col 5 Lines 63-64); a developing unit that develops as a toner image an electrostatic latent image formed on the photosensitive member which is scanned with the light flux emitted from the optical scanning device (see Kawamura Col 5 60-67); a transferring unit that transfers the developed toner image onto a material to be transferred (see Kawamura Col 5 60-67); and a fixing device that fixes the transferred toner image onto the material to be transferred (see Kawamura Col 5 65-67).

Regarding claim 10, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses a light source means (see Hayashi et al. Fig 1 Numeral 11) for emitting at least one light flux (1 and see Kawamura Col 2 Lines 51-58); deflection means (see Hayashi et al. Fig 1 Numeral 16) for deflecting at least one of the light fluxes emitted from the light source means (11); and a scanning optical system for imaging (see Hayashi et al. Col 4 Lines 11-16) the light flux deflected by the deflection means (16) onto a surface (18) to be scanned (Hayashi et al. Col 12 Lines 43-49), wherein the scanning optical system comprises a glass lens (see Hayashi et al. Col 13 Lines 62-64) and two (see Takanashi Fig 1 Numeral 52 and 53) plastic lenses (see Hayashi et al. Col 9 Lines 27-30), and chromatic aberration of magnification in a main scanning direction is corrected (Hayashi et al. Col 4 Lines 11-17). Hayashi et al. lacks

Art Unit: 2872

the teaching of the chromatic aberration of magnification direction is corrected to be equal to or smaller than 40 μm in the case where a difference of wavelengths is set to 5 nm.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Hayashi et al. scanning optical device and image forming apparatus with the wavelength of Kawamura's optical scanning device and Takanashi's lens formation for the purpose of correcting chromatic aberration. In addition, Hayashi et al. teaches chromatic aberration of magnification being eliminated in the subscanning direction, and it would be obvious to one of ordinary skill in the art at the time the invention was made to choose values that are small enough or arbitrarily for the purpose of eliminating the chromatic aberration of magnification in the main scanning direction by manipulating numbers, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesh*, 614 F. 2d 272, 205 USPQ (CCPA 1980).

Regarding claim 11, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses wherein the scanning optical system comprises a glass lens (see Hayashi et al. Col 13 Lines 62-64), a first plastic lenses (Hayashi et al Col 9 Lines 27-30) and a second plastic lens (Hayashi et al Col 9 Lines 27-30), which are disposed in order from the deflection means, the glass lens having negative power in the main scanning direction (see Takanashi Col 16 Lines 26-28) the office interprets the first lens group of Takanashi can be made of glass and substituting glass lenses for plastic

Art Unit: 2872

lenses is well known in the art, the first plastic lens having positive power in the main scanning direction and the second plastic lens (see Takanashi Col 16 Lines 28-30).

Regarding claim 12, Hayashi et al. in view of Kawamura and in further view of Takanashi is silent about the teach wherein the scanning device according to scanning optical system satisfies a relational expression, $|\Phi G/VG + \Phi p/Vp| < 0.02 * \Phi$;

However, the relationship is well known in the art because there is obviously a power to lens relationship with the total power divided by the number of lens and the total power of all the systems.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a power relationship expression, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ

Regarding claim 15, Hayashi et al. in view of Kawamura and in further view of Takanashi according to claim 10 discloses a photosensitive member (see Kawamura Col 5 Lines 60-62) located on the surface to be scanned (see Kawamura Col 5 Lines 63-64); a developing unit that develops as a toner image an electrostatic latent image formed on the photosensitive member which is scanned with the light flux emitted from the optical scanning device (see Kawamura Col 5 60-67); a transferring unit that transfers the developed toner image onto a material to be transferred (see Kawamura Col 5 60-67); and a fixing device that fixes the transferred toner image onto the material to be transferred (see Kawamura Col 5 65-67).

Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US Patent No. 6,317,246) in view of Kawamura (US Patent No. 6,496,293) and in further view of Takanashi (US Patent No. 5,247,385) and in further view of Kamikubo (US Patent No. 6,259,547).

Regarding claims 4 and 13, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses the invention set forth above. Hayashi et al. in view of Kawamura and in further view of Takanashi lacks the teaching wherein at least one surface of each of the first plastic lens and the second plastic lens in the main scanning direction is aspherical.

However, Kamikubo teaches of at least one surface of the first lens to aspherical (see Kamikubo Col 4 Lines 25-27).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Hayashi et al. in view of Kawamura and in further view of Takanashi scanning device to have an aspherical surface on a lens as shown by Kamikubo for the purpose of compensating the lateral chromatic aberration caused by the refraction lenses (see Kamikubo Col 4 Lines 27-29); furthermore, the Kamikubo reference does not teach the second lens to be aspherical, but one of ordinary skill in the art would modify the device to have at least one aspherical lens surface on each lens for the purpose of reducing the diameter of the beam passing there through (see Kamikubo Col 4 Lines 27-29).

Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US Patent No. 6,317,246) in view of Kawamura (US Patent No. 6,496,293) and in further view of Takanashi (US Patent No. 5,247,385) and in further view of Kamikubo (US Patent No. 6,259,547) and in further view of Ota (US Patent No. 5,724,172).

Regarding claims 7 and 16, Hayashi et al. in view of Kawamura and in further view of Takanashi discloses the claimed invention except for wherein a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning device.

However, Ota discloses wherein a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning device (see Ota Col 1 Lines 20-23).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Hayashi et al. in view of Kawamura and in further view of Takanashi and in further view of Kamikubo scanning device with a controller of Ota for the purpose of outputting an image signal to a scanning device, since it has been held to be with the general skill of a worker in the art to select a known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US Patent No. 6,317,246) in view of Kawamura (US Patent No.

6,496,293) and in further view of Takanashi (US Patent No. 5,247,385) and in further view of Iizuka et al. (US Pub. No. US2003/0128412 A1).

Regarding claims 8 and 17, Hayashi et al. in view of Kawamura and in further view of Takanashi according to claim 1 discloses a plurality scanning devices; a plurality of image bearing members arranged at positions on the surface to be scanned by the plurality of optical scanning devices (see Kawamura Col 14 Lines 54-60 and Fig 6) except for where they form images of different colors.

However, Iizuka et al. discloses where they form images of different colors (see Iizuka et al. Page 3 Paragraph 0045 Lines 5-9)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an optical scanning devices that form images of different colors since it is well known in the art that scanning devices form images of different color.

Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US Patent No. 6,317,246) in view of Kawamura (US Patent No. 6,496,293) and in further view of Takanashi (US Patent No. 5,247,385) and in further view of Iizuka et al. (US Pub. No. US2003/0128412 A1) and in further view of Ota (US Patent No. 5,724,172).

Regarding claims 9 and 18, Hayashi et al. in view of Kawamura and in further view of Takanashi and in further view of Iizuka et al. discloses the claimed invention except for wherein a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning device.

However, Ota discloses wherein a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning device (see Ota Col 1 Lines 20-23).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Hayashi et al. in view of Kawamura and in further view of Takanashi scanning device with a controller of Ota for the purpose of outputting an image signal to a scanning device, since it has been held to be with the general skill of a worker in the art to select a known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pranav V. Khatri whose telephone number is 571-272-8311. The examiner can normally be reached on M-F, 8:30-4:00.

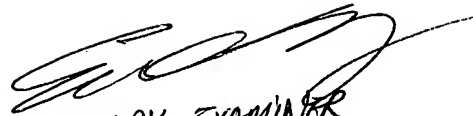
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/810,581
Art Unit: 2872

Page 12

Pranav Khatri
Examiner
Art Unit 2872



PRIMARY EXAMINER
Art Unit 2872